

REMARKS

Entry of the foregoing, re-examination and reconsideration of the subject matter identified in caption, pursuant to and consistent with 37 C.F.R. §1.112, and in light of the remarks which follow are respectfully requested.

The specification and claims have been amended at least partly in response to issues raised in the Office Action. Claims 24-58 remain pending in this application.

An abstract has been provided on a separate sheet as requested in paragraph (1) of the Office Action.

Claims 24-58 have been rejected under 35 U.S.C. §112, first paragraph, for the reasons set forth in paragraph (2) of the Office Action. Reconsideration of this rejection is requested for at least the following reasons.

Initially, applicants are unsure whether this rejection is based on an alleged lack of a written description or alleged lack of enablement or both. The specific language used in enunciating the Examiner's position (i.e., "it is unclear") also seems to imply a "lack of clarity" issue, i.e., under §112, second paragraph. Based on the word "enable" in the rejection, applicants are responding to this rejection as a lack of enablement issue.

All the terms quoted in paragraph (2) of the Office Action are defined in the specification. For example, the term "tricondensate polyfunctional isocyanate" is defined on page 4, beginning with line 18. The term "derived isocyanate function" is defined on page 6, lines 20-22 and page 8, lines 3-6. The term "true tricondensate polyfunctional isocyanate" is defined on page 7, lines 6-22. Thus, the terms "true" and "derived" are defined. In claims 24 and 25, the recitation of "another monomer" refers to the optional

addition of another monomer in the preparation of the tricondensate polyfunctional isocyanate in addition to the isocyanate monomer(s) taking part in the condensation. Note page 21, lines 22-27. The presence of biuret units is discussed on page 22 of the specification.

Applicants respectfully point out that the disclosure is directed to those of ordinary skill in this art. The present disclosure contains sufficient information to enable those skilled in the art to understand and practice the invention. The test for enablement is whether one reasonably skilled in the art could make or use the invention from the disclosure coupled with information known in the art without undue experimentation. Applicants need not teach what is well known in the art (MPEP §2164.01). The terminology in the claims is defined in the specification and/or would readily be understood by those skilled in the art.

Based on the above, it is requested that the rejection under §112, first paragraph, be reconsidered and withdrawn.

Claims 24-58 have been rejected under 35 U.S.C. §112, second paragraph, as allegedly indefinite for the reasons expressed in paragraph (3) of the Office Action. Reconsideration of this rejection is requested for at least the following reasons.

Initially, applicants point out that the legal standard to determine compliance with the second paragraph of 35 U.S.C. §112 is whether a claim reasonably apprises those of ordinary skill in the art of its scope. See In re Warmerdam, 33 F.3d 1354, 1361, 31 USPQ2d 1754, 1759 (Fed. Cir. 1994). In determining whether this standard is met, the definiteness of the language employed in the claim must be analyzed, not in a vacuum, but

always in light of the teachings of the prior art and of the particular application disclosure as it would be interpreted by one possessing the ordinary level of skill in the pertinent art.

In re Johnson, 558 F.2d 1008, 1015, 194 USPQ 187, 193 (CCPA 1977).

Applicants have amended certain claims in response to issues raised in the Office Action. With regard to specific comments made in paragraph (3) of the Office Action, applicants offer the following reply: (1) the terminology "tricondensate polyfunctional isocyanate" has been used throughout the specification and claims to identify the isocyanate component of the present invention. Methods of preparing the "tricondensate polyfunctional isocyanate" component have been disclosed. Applicants respectfully submit that those of ordinary skill in this art would readily comprehend the scope of the above quoted terms; (2) the polyfunctional isocyanate(s) referred to in line 7 of claim 24, lines 7-8 of claim 25, and lines 1-2 of claim 26 clearly refer to the tricondensate polyfunctional isocyanate(s) mentioned in the claims since no other polyfunctional isocyanate(s) are mentioned; (3) the terms "hydrocarbon-based", "as well as" "may" and "other atoms" have been replaced by other terminology; (4) the second occurrence of "or" has been corrected in claim 28; (5) the terms "true isocyanate function" and "derived isocyanate function" are fully defined in the disclosure and applicants respectfully submit that those of ordinary skill in this art would ascertain the scope and meaning of the terminology. If the Examiner would suggest other terminology he considers more suitable, applicants would consider it; (6) the definition of "m" has been corrected in claim 28. The formula containing "Q" is represented by "A" in formula (I). The substituents R₁, R₂ and R₃ are attached to "Q"; (7) regarding claim 27, the word "true" has been deleted; (8) claims 30-36 have been

amended to provide antecedent basis; (9) the terminology "low-viscosity" and "desired degree of conversion" has been extensively discussed in the specification - see, for example, page 22, lines 23-25 and the many working examples. Applicants respectfully submit that those of ordinary skill in this art would readily ascertain the scope and meaning of these expressions; (10) in claims 41 and 42, "allophanation" has been changed as suggested by the Examiner; (11) claim 42 has been amended to change the term "-based", to delete "respectively" and to change "cyclotrimerization reaction"; (12) in claim 43, "C₁₂" has been corrected; (13) in claim 45, applicants submit that the language "at least about 25%" is definite. The word "about" is defined on page 3, line 34 et seq. of the specification. The scope of claim 45 would be readily apparent to those of ordinary skill; (14) regarding claims 46-53, applicants have previously addressed the issue of the scope of "reduced-viscosity". The terms "primary allophanate" and "true tricondensate polyfunctional isocyanate" are defined in the disclosure (see page 7 and page 10); (15) regarding claim 53, "advantageously two" has been removed. The terms "true trimer", "tricondensates", "tricondensation reaction" and "true tricondensate polyisocyanates" are all either defined in the specification or their scope would be readily apparent in reading the disclosure; (16) claims 54-58 have been amended to provide antecedent basis or correct spelling errors as noted in the last five sentences of paragraph (3) of the Office Action.

In view of the above amendments and remarks, reconsideration and withdrawal of the §112, second paragraph, rejection is requested.

Claims 46-5, 53 and 54 have been rejected under 35 U.S.C. §102(b) as anticipated by EP 649 866 for the reason set forth in paragraph (5) of the Office Action.

Reconsideration of this rejection is requested for at least the following reasons.

EP '866 appears to disclose polyisocyanate compositions containing allophanates in an amount of between 2.5 and 23 weight %. The publication does not appear to disclose the precise nature of the allophanate compounds to which the allophanate groups are bound. There is no disclosure that the polyisocyanate compositions have a content of tricondensate allophanates of less than 10% as specified in the claims. Accordingly, the '866 document is not anticipatory and the §102(b) rejection based on the reference should be withdrawn.

Claims 53-57 were rejected under 35 U.S.C. §102(b) as anticipated by U.S. Patent 5,258,482 to Jacobs et al or U.S. Patent 5,235,018 to Potter et al for the reasons given in paragraph (6) of the Office Action. Reconsideration and withdrawal of this rejection is requested for at least the following reasons.

This rejection is based on the premise that "the weight ratio of monoallophanate to monoallophanate and monoisoxyanurate is considered to meet that claimed within claim 53" and that "applicants' claimed low contents of bis- and tris-allophanates are inherently met by the references."

Neither Jacobs '482 nor Potter '018 discloses the presence of bis- and tris-allophanates, let alone in the amounts set forth in the claims. The rejection does not set forth any rationale or reasons to support the above quoted conclusions.

It is well established that "[t]he fact that a certain result or characteristic may occur or be present in the prior art is not sufficient to establish the inherency of that result or characteristic." *In re Rijckaert*, 9F.3d 1531, 1534, 28 U.S.P.Q.2d 1955, 1957 (Fed. Cir. 1992). "To establish inherency, the extrinsic evidence 'must make clear that the missing descriptive matter is necessarily present in the thing described in the reference, and that it would be so recognized by persons of ordinary skill. Inherency, however, may not be established by probabilities or possibilities. the mere fact that a certain thing may result from a given set of circumstances is not sufficient.' *In re Robertson*, 169F.3d 743, 745, 49 U.S.P.Q.2d 1949, 1950-51 (Fed. Cir. 1999)". In relying upon the theory of inherency, the Examiner must provide a basis in fact and/or technical reasoning to reasonably support the determination that the allegedly inherent characteristic necessarily flow from the teachings of the applied prior art." Ex parte Levy, 17 U.S.P.Q.2d 1461, 1464 (Bd. of Pat. Apps. & Inter. 1990)." Note M.P.E.P. §2112.

Based on these principles, applicants respectfully submit that there is no basis in fact and/or technical reasoning to reasonably support a conclusion that the allegedly inherent characteristic (i.e., weight ratios and presence of bis- and tris-allophanates) necessarily flows from the disclosure of Jacobs '482 or Potter '018. Accordingly, it is requested that the §102(b) rejection based on these references be withdrawn.

Claims 24-45, 51 and 52 stand rejected under 35 U.S.C. §103(a) as unpatentable over Potter '018 or Jacobs '482 or EP '866 for the reasons expressed in paragraphs (7) and (8) of the Office Action. Reconsideration and withdrawal of this rejection is requested for at least the following reasons.

Applicants do not agree with the Examiner's assertion that "it would have been obvious to simply mix the separate components, so as to obtained a composition having the benefit of reduced viscosity". All three cited documents teach the skilled artisan to produce the allophanate groups *in situ* within the isocyanate containing compositions. Also, while the documents intend to prepare isocyanurate-containing polyisocyanate compositions with low viscosity, none of them clearly present the unexpected lowering of viscosity as stated in the present invention. Note, for example, the last line of table of example 4, the last line of table of example 9, and the last line of table of example 10. The unexpected results in reduced viscosities obtained by mixing isocyanurate with allophanates rather than producing allophanate groups *in situ* within isocyanurate-containing compositions clearly demonstrate that the compositions of the invention are totally different from the compositions of the prior art.

The teachings of the three cited documents unambiguously would lead the skilled artisan to prepare the allophanate groups *in situ* within the isocyanurate composition, and would not motivate the skilled artisan to mix trimerisates with allophanates. On the contrary, EP 649 866 teaches away from the present invention since it clearly states, on page 2, lines 46-47, that the use of trimerisates free from allophanate groups is linked with a diminution of the functionality of the polyisocyanate. With such a drawback, the skilled person would not be motivated to us isocyanurates almost free from allophanates, as is the case in the present invention.

Based on the above, the §103(a) rejection on Potter '018 or Jacobs '482 or EP '866 should be withdrawn and such action is respectfully requested.

Claims 24-26, 28-41 and 43-58 have been rejected under 35 U.S.C. §103(a) as unpatentable over U.S. Patent 4,837,359 to Woynar et al for reasons set forth in paragraph (9) of the Office Action. Reconsideration of this rejection is requested for at least the following reasons.

Woynar '359 discloses polyisocyanates having biuret groups without any teaching or suggestion to transpose this teaching to isocyanurate groups. At column 4, lines 64 and following, it is suggested to use water and especially low molecular weight polyvalent alcohols to incorporate, i.e., to create within the composition, urethane or allophanate groupings. There is no suggestion nor disclosure in Woynar '359 of any process of mixing allophanates with polyisocyanate compositions (which are not suggested to be isocyanurates) in order to reduce its viscosity. Thus, there would be no expectation that reduced viscosity could be achieved. Accordingly, the §103(a) rejection based on Woynar '359 should be withdrawn.

From the foregoing, further and favorable action in the form of a Notice of Allowance is believed to be next in order and such action is earnestly solicited. If the Examiner has any questions regarding this paper or the application in general, he is invited to telephone the undersigned at (703) 838-6683.

Respectfully submitted,

BURNS, DOANE, SWECKER & MATHIS, L.L.P.

By: George F. Lesmes
George F. Lesmes
Registration No. 19,995

P.O. Box 1404
Alexandria, Virginia 22313-1404
(703) 836-6620

Date: January 30, 2003



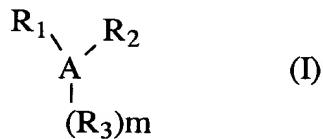
Application No. 09/673,951
Attorney's Docket No. 004900-188
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Marked-up Claims 26, 27, 28, 30-36, 41-44 and 53-58

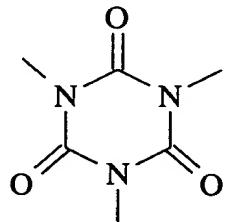
Please replace claims 26, 27, 28, 30-36, 41-44 and 53-58 as follows:

26. (Amended) The process of claim 24 or claim 25, wherein the tricondensate polyfunctional isocyanates has the following general formula:

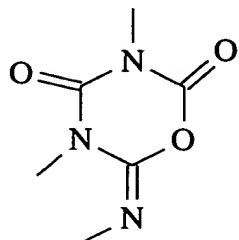


in which A represents:

- an isocyanurate group of formula:



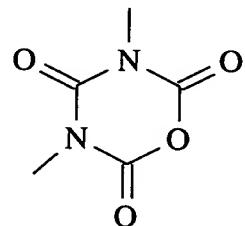
- an imino-oxadiazine-dione of the following formula:



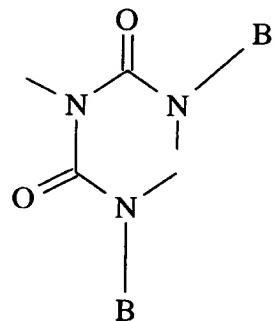
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- an oxadiazine-trione of the following formula:

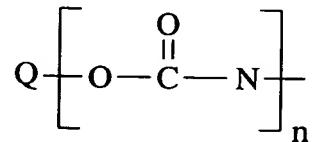


a biuret group of formula



B being H or a [hydrocarbon-based] C₁₋₂₀ group containing [1 to 20 carbon atoms, carbon and hydrogen as well as,] optionally, other hetero atoms [(O, S, Si, etc.)]; or

- a group of formula:



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and in which R₁, R₂ and R₃, which may be identical or different, represent a [hydrocarbon-based] group containing carbon and hydrogen, comprising a true or derived isocyanate function,

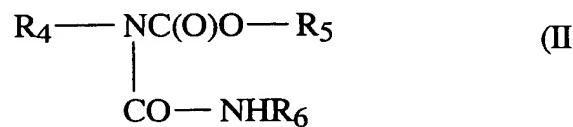
Q is a [hydrocarbon-based] group, as defined for R₁ to R₃,

m is an integer from 0 to [2] 1,

n is the integer 3 or 4.

27. (Amended) The process of claim 24 or claim 25, wherein the tricondensate polyfunctional isocyanate composition comprises at least one [true] isocyanurate polyisocyanate.

28. (Amended) The process of claim 24 or claim 25, wherein the allophanates [or] are of the following formula II:



in which:

- R₄ and R₆, which may be identical or different, represent a [hydrocarbon-based] group containing carbon and hydrogen comprising a true or derived isocyanate function,
- R₅ represents an alkyl group.

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30. (Amended) The process of claim 24 or claim 25, wherein the mixture of allophanates comprises mono-, bis- and trisallophanates, in an amount of at least 2/3, by weight relative to the total weight of the allophanate [composition] mixture after removal of [the] unreacted monomers.

31. (Amended) The process of claim 24 or claim 25, wherein the mixture of allophanates comprises mono-, bis- and trisallophanates, in an amount of at least 75%, by weight relative to the total weight of the allophanate [composition] mixture after removal of [the] unreacted monomers.

32. (Amended) The process of claim 24 or claim 25, wherein the mixture of allophanates comprises mono-, bis- and tris-allophanates, in an amount of at least 90%, by weight relative to the total weight of the allophanate [composition] mixture after removal of [the] unreacted monomers.

33. (Amended)The process of claim 24 or claim 25, wherein [the amount of] bis-allophanate represents up to 10% of the total weight of the allophanate [composition].

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34. (Amended) The process according of claim 24 or claim 25, wherein [the amount of] tris-allophanates [is] are less than or equal to 30%, relative to the total weight of the [composition] allophanate.

35. (Amended) The process according of claim 24 or claim 25, wherein [the amount of] tris-allophanates [is] are less than or equal to 20%, relative to the total weight of the [composition] allophanate.

36. (Amended) The process according of claim 24 or claim 25, wherein [the amount of] tris-allophanates [is] are less than or equal to 15%, relative to the total weight of the [composition] allophanates.

41. (Amended) The process of claim 24 or 40, wherein the isocyanate(s) used for the (cyclo)condensation reaction is (are) identical to the isocyanate(s) used for the [allophanatation] allophanatization reaction.

42. (Amended) The process of claim 24 or 40, wherein the isocyanate(s) used for the [allophanatation] allophanatization reaction and the isocyanate(s) used for the [cyclotrimerization] cyclocondensation reaction satisfy one, two or three of the following conditions:

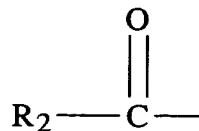
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- at least one or at least two, of the NCO functions are linked to a [hydrocarbon-based] carbon-containing skeleton via a saturated (sp^3) carbon;
- at least one or at least two, of said saturated (sp^3) carbons bears at least one[, respectively two,] hydrogen(s)
- all the intermediate carbons via which the isocyanate functions are linked to the [hydrocarbon-based] carbon-containing skeleton are saturated (sp^3) carbons which partially, or totally, bear one hydrogen or two hydrogens.

43. (Amended) The process of claim 40, wherein the alcohol is selected from the group consisting of:

- aliphatic monoalcohols containing a C_1-C_{10} linear chain;
- aliphatic monoalcohols containing a [C_3-C_{12}] C_3-C_{12} branch chain comprising not more than four secondary carbon atoms;
- diols containing a linear C_2-C_{40} or branched C_3-C_{40} chain; of formula R- [O-CH(R₁) -CH₂]_n-OH, in which R₁ represents H or a C_1-C_8 alkyl group, or polyether of formula -CH₂OR₁₀, R₁₀ representing a polyoxyalkylene chain, n is an integer from 1 to 50, and R is a linear or branched C_1-C_{20} alkyl group, or R is a group



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with R₂ being a linear or branched C₁-C₂₀ alkyl group; and

- silanols.

44. (Amended) The process of claim 40, wherein the NCO/OH ratio of [respectively] the isocyanate and the alcohol in step b) is greater than 4.

53. (Amended) A reduced-viscosity tricondensate polyfunctional isocyanate composition, comprising at least one true tricondensate polyfunctional isocyanate and at least one allophanate, said composition satisfying at least one[, advantageously two,] of the following conditions:

- a G ratio defined by:

[True] true tricondensate polyisocyanates, obtained from the condensation of three identical or different isocyanate molecules not modified with carbamate or allophanate

G = _____

[Sum] sum of the polyisocyanate molecules bearing at least one tricondensate function obtained from the condensation of three identical or different isocyanate molecules

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greater than 0.3,

- an allophanate/allophanate + true trimer weight ratio of between 2.5% and 99%,
- the tricondensates are obtained from a tricondensation reaction for which the degree of conversion of the identical or different isocyanate monomer(s) into tricondensate polyfunctional polyisocyanates contained in the composition is greater than 8%,
- at least 1% and not more than 99%, of biuret is present, these amounts being given on a weight basis.

54. (Amended) The tricondensate polyfunctional [isocyanate] isocyanate composition of claims 46 or 53, wherein the [mixture of] allophanates comprises mono-, bis- and tris-allophanates in an amount of at least 2/3, by weight relative to the total weight of the allophanate [composition] after removal of [the] unreacted monomers.

55. (Amended) The tricondensate polyfunctional [isocyanate] isocyanate composition of claims 46 or 53, comprising an amount of [bis-allophanate] bis-allophanate representing up to 10%, of the total weight of the allophanate [composition].

56. (Amended) The tricondensate polyfunctional [isocyanate] isocyanate composition of claims 46 or 53, comprising an amount of tris-allophanates less than or equal to 30%, by weight relative to the total weight of the composition.

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57. (Amended) The tricondensate polyfunctional [isocyanate] isocyanate composition of claims 46 to 53, comprising a ratio bis-allophanate functions + tris-allophanate functions/monoallophanate functions greater than or equal to 0.1, and up to 0.3.

58. (Amended) The tricondensate polyfunctional [isocyanate] isocyanate composition of claim 46, comprising hexamethylene diisocyanate biuret.



Attorney's Docket No. 004900-188
Application No. 09/673,951

ABSTRACT

A method is described for preparing a tricondensate polyfunctional isocyanate composition, preferably having at least an isocyanurate and/or biuret group, which includes adding to a tricondensate polyfunctional isocyanate, or a mixture of different tricondensate polyfunctional isocyanates, obtained by (cyclo)condensation, in particular (cyclo)trimerization of one or several identical or different isocyanate monomers and optionally of another monomer, an allophanate of one or several identical or different isocyanates, or a mixture of different allophanates. The isocyanates or isocyanate monomer mixtures used for preparing the polyfunctional isocyanate(s) may be identical to or different from the isocyanate(s) or isocyanate mixture used for preparing the allophanate(s).